from the Bertrand-Thiel process, which is carried out in the basic open-hearth furnace. Pig iron was introduced into the furnace in the molten state, and. refined by means of iron ore additions, whereby the entire heat action of the furnace gases was exercised unexposed to the charge. The composition of the pig iron was :
1st ladle at 10*0: 3*60 per cent. C, 0*47 per cent. Mn,
0-56 per cent. Si: 1*33 per cent. P. 2nd ladle at lO'll: 3*45 per cent. C, 0'42 per cent. Mn,
0*46 per cent. Si, T39 per cent. P.
After repeated additions of ore and lime the metal contained at 12*22, 2*50 per cent. C, O'lO per cent. Mn, 0'04 per cent. Si. O087 per cent. P.
Therefore, in somewhat over two hours, manganese, silicon and phosphorus were nearly completely eliminated, whilst the carbon was only lowered by something more than 1 per cent.
Beyond doubt, in the course of the two hours duration of the furnace reaction, the bath was brought to a much higher temperature than was possible with the Krupp process, and in spite of that, the exothermic reactions took precedence.
In " Stahl und Eisen," 1905, p, 1343, a further example of the action at high temperatures is furnished. Pig iron was melted down in a basic open-hearth furnace and brought to a very high temperature. Thereupon an iron ore addition to an extent of 12*4 per cent, on the weight of the metal was introduced, and after forty minutes' action, a test was taken of the metal.
The molten metal had the following composition :—
Si 1*33 per cent.; Mn 2*71 per cent; P 012 per cent.; C 3'66 per cent.
After forty minutes' action of ore, it contained:
Si 0'02 per cent.; Mn 0*33 per cent.; P O'Ol per cent. ; C 3*14 per cent.
Dr. Ing. Th. Naske furnishes in " Stahl und Eisen," 1907, p. 233, Table 10, another similar experiment in which 20,018 kilogrammes molten pig iron was exposed during ninety